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AN ACCOUNT
OF
THE MANUFACTURE
OF THE
BLACK TEA,
AS
NOW PRACTISED AT SUDDEYA
IN
UPPER ASSAM,
BY THE CHINAMEN SENT THITHER FOR THAT PURPOSE.
WITH
SOME OBSERVATIONS ON THE CULTURE OF THE PLANT
IN CHINA,
AND ITS GROWTH IN ASSAM.

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THE METHOD

OF MAKING

BLACK TEA.

IN the first place the youngest and most tender leaves are gathered ; but when there are many hands and a great quantity of leaves to be collected, the people employed nip off with the forefinger and thumb the fine end of the branch with about four leaves on, and some times even more, if they look tender. These are all brought to the place where they are to be converted into Tea; they are then put into a large, circular, open-worked bamboo basket, having a rim all round, two fingers broad (see fig 1). The leaves are thinly scattered in these baskets, and then placed in a framework of bamboo, in all appearance like the side of an indian hut without grass, resting on posts, 2 feet from the ground, with an angle of about 25° (fig. 2). The baskets with leaves are put in this frame to dry in the sun, and are pushed up and brought down by a long bamboo with a circular piece of wood at the end (fig. 3). The leaves are permitted to dry about two hours, being occasionally turned ; but the time required for this process depends on the heat of the sun. When they begin to have a slightly withered appearance, they are taken down and brought into the house, where they are placed on a frame (fig. 4) to cool for half an hour.

They are then put into smaller baskets of the same kind as the former, and placed on a stand (fig. 5). People are now employed to soften the leaves still more by gently clapping them between their hands, with their fingers and thumb extended, and tossing them up and letting them fall, for about five or ten minutes. They are then again put on the frame (fig. 4) during half an hour, and brought down and clapped with the hands as before. This is done three successive times, until the leaves become to the touch like soft leather; the beating and putting away being said to give the tea the black colour and bitter flavour. After this the Tea is put into hot cast-iron pans (fig. 6) which are fixed in a circular mud fire-place, so that the flame cannot ascend round the pan to incommode the operator. This pan is well heated by a straw or bamboo fire to a certain degree. About two pounds of the leaves are then put into each hot pan, and spread in such a manner that all the leaves may get the same degree of heat. They are every now and then briskly turned with the naked hand to prevent a leaf from being burnt. When the leaves become inconveniently hot to the hand, they are quickly taken out and delivered to another man with a close worked bamboo basket (fig. 7) ready to receive them. A few leaves that may have been left behind are smartly brushed out with a bamboo broom; all this time a brisk fire is kept up under the pan. After the pan has been used in this manner three or four times, a bucket of cold water is thrown in and a soft brickbat and bamboo broom used, to give it a good scouring out; the water is thrown out of the pan by the brush on one side, the pan itself being never taken off. The leaves all hot on the bamboo basket are laid on a table that has a narrow rim on its back, to

prevent these baskets from slipping off when pushed against it. The two pounds of hot leaves are now divided into two or three parcels, and distributed to as many men, who stand up to the table with the leaves right before them, and each placing his legs close together; the leaves are next collected into a ball, which he gently grasps in his left hand, with the thumb extended, the fingers close together, and the hand resting on the little finger. The right hand must be extended in the same manner as the left, but with the palm turned downwards, resting on the top of the ball of tea leaves. Both hands are now employed to roll and propel the ball along; the left hand pushing it on, and allowing it to revolve as it moves; the right hand also pushes it forward, resting on it with some force, and keeping it down to express the juice which the leaves contain. The art lies here in giving the ball a circular motion and permitting it to turn under and in the hand two or three whole revolutions, before the arms are extended to their full length, and drawing the ball of leaves quickly back without leaving a leaf behind, being rolled for about five minutes in this way (fig. 8). The ball of Tea leaves is from time to time gently and delicately opened with the fingers, lifted as high as the face, and then allowed to fall again. This is done two or three times, to separate the leaves; and afterwards the basket with the leaves is lifted up as often, and receives a circular shake to bring these towards the centre. The leaves are now taken back to the hot pans and spread out in them as before, being again turned with the naked hand, and when hot taken out and rolled; after which they are put into the drying basket (fig. 9) and spread on a sieve, which is in the centre of the basket,

and the whole placed over a charcoal fire. The fire is very nicely regulated; there must not be the least smoke, and the charcoal should be well picked.

When the fire is lighted it is fanned until it gets a fine red glare and the smoke is all gone off; being every now and then stirred and the coals brought into the centre, so as to leave the outer edge low. When the leaves are put into the drying basket, they are gently separated by lifting them up with the fingers of both hands extended far apart and allowing them to fall down again; they are placed 3 or 4 inches deep on the sieve, leaving a passage in the centre for the hot air to pass. Before it is put over the fire the drying basket receives a smart slap with both hands in the act of lifting it up, which is done to shake down any leaves that might otherwise drop through the sieve, or to prevent them from falling into the fire and occasioning a smoke, which would affect and spoil the Tea. This slap on the basket is invariably applied throughout the stages of the Tea manufacture. There is always a large basket underneath to receive the small leaves that fall, which are afterwards collected, dried and added to the other Tea; in no case are the baskets or sieves permitted to touch or remain on the ground, but always laid on a receiver with three legs (fig. 11). After the leaves have been half dried in the drying-basket, and while they are still soft, they are taken off the fire and put into large open-worked baskets (fig. 1) and then put on the shelf (fig. 4) in order that the Tea may improve in colour.

Next day the leaves are all sorted into large, middling, and small; sometimes there are four sorts. All these the Chinese informed me become so many different kinds of Teas; the smallest leaves they called Pha-ho,

the 2d Pow-chong, the 3d Su-chong, and the 4th or the largest leaves, Toy-chong. After this assortment they are again put on the sieve in the drying basket (taking great care not to mix the sorts) and on the fire as on the preceding day; but now very little more than will cover the bottom of the sieve is put in at one time, the same care of the fire is taken as before, and the same precaution of tapping the drying basket every now and then. The Tea is taken off the fire with the nicest care for fear of any particle of the Tea falling into it. Whenever the drying basket is taken off, it is put on the receiver, (fig. 11) the sieve in the drying basket taken out, the Tea turned over, the sieve replaced, the tap given, and the basket placed again over the fire. As the Tea becomes crisp it is taken out and thrown into a large receiving basket, until all the quantity on hand has become alike dried and crisp; from which basket it is again removed into the drying basket, but now in much larger quantities. It is then piled up eight and ten inches high on the sieve in the drying basket, in the centre a small passage is left for the hot air to ascend, the fire that was before bright and clear, has now ashes thrown on it to deaden its effect, and the shakings that have been collected are put on the top of all, the tap is given and the basket with the greatest care is put over the fire. Another basket is placed over the whole to throw back any heat that may ascend. Now and then it is taken off and put on fig. 11, the hands with the fingers wide apart are run down the sides of the basket to the sieve, and the Tea gently turned over, the passage in the centre again made, &c. and the basket again placed on the fire. It is from time to time examined, and when the leaves have become so crisp that they break by the slightest pres-

sure of the fingers, it is taken off, when the Tea is ready. All the different kinds of leaves underwent the same operation. The Tea is now little by little put into boxes and first pressed down with the hands and then with the feet. (clean stockings having been previously put on.)

There is a small room inside of the Tea house, 7 cubits square and 5 high, having bamboos laid across on the top to support a net work of bamboo, and the sides of the room smeared with mud to exclude the air. When there is wet weather, and the leaves cannot be dried in the sun, they are laid out on the top of this room on the net work, on an iron pan, the same as is used to heat the leaves; some fire is put into it, either of grass or bamboo, so that the flame may ascend high, the pan is put on a square wooden frame (fig. 12) that has wooden rollers on its legs, and pushed round and round this little room by one man, while another feeds the fire, the leaves on the top being occasionally turned; when they are a little withered, the fire is taken away, and the leaves brought down and manufactured into Tea, in the same manner as if it had been dried in the sun. But this is not a good plan, and never had recourse to, if it can possibly be avoided.

A DIALOGUE BETWEEN MR. C. A. BRUCE AND THE CHINA BLACK-TEA MAKERS.

Does the China Tea plant grow mostly on the mountains of China or in the vallies? "About seven parts grow on the mountains and three in the vallies." Does the Tea plant grow amongst the snow? "Yes." Does not the snow kill or hurt the plants? "It hurts them very little, it may kill some of the old trees, but often new shoots come up from the old plants." To what

age does the Tea plant attain in your country? "Generally, about fifty years, but some only live ten." How do you plant the Tea seeds? "I dig a hole about four fingers deep and eight inches in diameter, and put as many seeds as I can hold in both hands into it, then cover it up." How long is it before the seedlings come up, and in what months do you put them into the ground? "We sow some in November and December, and some in January; when the rains set in they come up." When are the plants fit for plucking? "Sometimes in the third, and sometimes in the fourth year, according to the soil." How high are they in the third year? "From one to two cubits; a great deal depends on the soil." If you were not to pluck the leaves, would the plants grow higher? "To be sure they would; it is the constant plucking of the leaves that keeps the plants low." How many of the seeds that you sow come up in general? "If good seeds from ten to twenty." Do you allow them all to grow in the same place, or do you transplant them afterwards? "We allow them all to grow, and very seldom transplant; if we do, it is performed in the rains, and from four to six plants are put close together, so as to form a fine bush." At what distance is one Tea bush from another? "From three to four feet apart are small ridges of earth, eight inches to a foot high, a hollow space being left between to draw off the rain water; the bushes are at equal distances from each other, and in straight lines." Do you ever dig trenches to prevent the plants being washed away? "Yes, we are obliged to dig many; the shape and form of the trenches depend upon the ground and situation." What quantity of manufactured Tea do you think each Tea plant produces in one season? "This varies

very much ; some plants only produce two rupees weight, while others produce a pound and a half ; but about a quarter of a pound, all round, I should think the first crop ; the second crop a little less, and some people never take the third crop for fear of killing the trees." Do you always manufacture the Tea in China, in the same way as you have the Assam Tea ? " The same." Do you know how to make Green Tea ? " No." Do you ever put anything to the Tea to give it a flavour ? " Never." Do you ever sow or plant in the shade, or have you any trees to shade the plants ? " No, there are a few large trees here and there, but not for shade." If your plantations are on the side of mountains, they cannot have the sun all day ? " True, in some plantations the plants are in the shade for nearly half the day ; some China merchants that come to purchase Tea, pretend to know which is shady and which sunny by the smell, the sunny being preferred." Do the Tea plants cast all their leaves in the winter ? " Great numbers fall, but the plants always retain some." Which do you think have the most juice when they are rolled, the leaves from the sunny tract, or those from the shady ? " Those from the shady tract." Which require to be most dried in the sun ? " The shady-tract leaves." Which of the two Teas do you think best ? " That from the sunny tract." Which produce most leaves, those in the shade, or those plants that have been cut down, and afterwards permitted to grow up ? " The latter twice as many." Which do you think produce most seeds ? " Those in the sun." Do you ever in China plant from slips ? " No." After you have made the Tea in China, how long is it before it is fit to drink ? " About one year ; if drank before that, it will taste unpleasantly and of the fire, and will affect the head." How long

will Tea keep without being damaged? "If well secured from the air in boxes, it will keep good for three or four years." In which months do you commence plucking the leaves in China? "If the weather is warm and fine, and the season has not been a very cold one, the first crop commences in May, the second crop about forty-seven days after the first, and the third crop about the same time after the second, or forty-two days." When you roll the China leaves, do you think they contain more juice, or less, than the Assam ones? "The China leaves, I think, have more juice, and the leaves are much smaller." Is the soil of the China Tea the same as the Assam? "The same." How often do you weed your plantations? "Once in the rains and once in the cold weather."

The place these Chinamen speak of is called "Kong-see," on the mountains, about 40 days journey by water to Canton, and two days journey from the great Tea country "Mow-ee-san."

A few Observations on the Tea Plant of Assam.

The Tea plants in Assam have in general been found to grow, and to thrive best, near small rivers and pools of water, and in those places where, after heavy falls of rain, large quantities of water have accumulated, and in their struggle to get free, have cut out for themselves numerous small channels. The sort of land to which I allude will be perhaps better explained by means of a diagram.



The dotted line shews the limit of the highest flood-

ing. On the top of this land you must fancy a thick wood of all sorts and sizes of trees, and amongst these the Tea tree, struggling for existence; the ground here and there having a natural ditch cut by the rain water, which forms so many small Islands. The largest piece of ground that I have met with, I think was about 600 paces without a break. I also add a section of the little river Kahong, where the Tea plant abounds, exhibiting many small Islands, every one of which is covered with trees of various sizes, and the Tea among them; the land being never wholly inundated in the rains, though nearly so. This kind of land is called Coor-kah Muttty. I have never met with the Tea plants growing in the sun, but invariably under shade, in thick woods, or what we call tree-jungle, and only there, and in no other jungle whatever. It struggles for existence amongst so many other trees, that it becomes tall and slender, with most of its branches high up. The largest Tea tree I ever met with was 29 cubits high, and four spans round; very few I should say attain that size. I have taken great numbers of Tea plants from the jungles, brought them 4 to 8 days journey to my own house, and planted them in the sun, that is, without any shade; during the first six months the half of them died, at the end of the year about one quarter of what I had originally brought only lived; at the end of the 2d year there was still less; those that did live threw out leaves and blossoms, but the fruit never came to perfection. The plants I speak of were from one to three feet high; if they have grown any thing since they were transplanted, it has hardly been perceptible, either in height or thickness; many of them have had the advantage of a little shade from the trees in my garden, and those that had the most

shade I find look healthier than those that had none, and they throw out more leaves. I have often read and heard of the China Tea plant growing no higher than three feet ; their being planted in the sun and their leaves constantly gathered, I think accounts for it. A short time ago I requested and got permission from Government to try some experiments in my own way. About the middle of last March, I brought three or four thousand young plants from their native soil in the Muttuck country, about eight days journey, and planted them in the tree-jungles of this place, eight and ten close together, in deep shade. From 4 to 500 were planted in different places, some miles from each other ; in the latter end of May I visited them and found them as fresh as if they had been in their native soil, throwing out fresh leaves. As these thrived so well, last June I brought from the same place 17,000 more young plants, and planted them in Coor-kah Mutty, about two miles from this place in deep shade ; they are now throwing out new leaves and thriving as well as could be expected, although the soil here is nothing like that from whence they were taken—in which point alone the places differ. To shew how very hardy they are I may mention, that they were in the first instance plucked out by the roots by the village people who were sent to bring them from their native jungles, put upright into baskets without any earth, brought two days journey on men's backs, put upright into canoes, a little common earth only being thrown amongst their roots, and were from seven to twenty days before they reached me ; and then they had to be carried half a day's journey to the intended new plantation, and were four and five days with only a little moist earth at their roots, before they were

finally put into the ground. And yet these plants are doing well ; at least the greater part of them. I will give another instance of their hardiness. Last year the Government sent a deputation of three scientific gentlemen to examine the Assam Teaplant, Dr. Wallich, Mr. Griffith, and Mr. McClelland,—the two former Botanists, the latter a Geologist. Dr. Wallich who conducted the deputation, requested me to accompany them, being the only European who had ever visited the Tea tracts, as the different localities are called. One day after having seen some Tea in company with these gentlemen, and as we were returning, I was informed by some natives of another patch or tract of Tea that had been cut down. We went and examined it, and found the plants just coming up, about 6 inches high. On enquiry we were told that the villagers took the Tea plant to be so much jungle, and therefore nearly cut all of it down close to the ground, and set fire to the whole, and then planted paddy or rice on the spot. The crop of paddy had just been cut and brought in ; when we saw the plants, the shoots were coming up from the roots and old stumps, thick and numerous. Some Tea plants I noticed had only been cut a foot, and some two to four feet from the ground ; all these threw out numerous shoots and leaves an inch or two below where they had been cut. I afterwards converted this piece of ground into a Tea garden on account of the Government, and now it is one of the finest I have ; where there was formerly one Tea plant, there are now upwards of a dozen, the new shoots from the old cuttings forming a fine bush, and shewing a great contrast to some of the original trees, which I have permitted to stand, with slender trunks and a few branches only at the top. This tract or garden has yielded

more Tea this season, than twelve times the same space of ground in the jungles would have done. I found that as the plants that had been cut down grew up again, the leaves acquired a yellowish tinge from their exposure to the sun, and were much thicker than those in the jungles ; but this yellow tinge has worn off, and the leaves are now as green as those in the shade. As this tract answered so well by being cut down and set fire to, I tried the same experiment upon another tract close by, and it has come up to what I expected of it, eight to twelve new shoots having risen from the old stumps in the place of one. It is now a very fine Tea tract. Not knowing how this plan of cutting down might answer eventually, and how it might effect the plants, I took another tract in hand, allowed all the Tea plants to remain, but cut down all the other trees, large and small, that gave them shade, piled them up, and what I could not set fire to, I threw into the water courses. These Tea plants are doing well, but still each plant remains single, consequently has not many leaves, and is much in the same condition as when under shade. We have not had sufficient time to show what effect the sun may have on the leaves, and the Tea made from them. This tract has a curious appearance, the plants appearing hardly strong enough to support themselves now they are deprived of their friendly shade. I have some other tracts under experiment ; some where I have permitted the jungle trees to grow, and only cleared away the brushwood and other small trees to admit the rays of the sun ; others with very little shade. I have cut off branches of the Tea plants and laid them horizontally in the ground, with an inch or two of earth on them, and they have thrown out numerous shoots the whole length of

the branch ; other branches were simply pushed into the earth, and they have grown ; but this was all in the shade. I do not think they would answer so well in the sun.

I have the pleasure of furnishing a map which I have made of all the Tea tracts I have discovered. Since it was composed several more tracts have been discovered, which I have not had time to enter. It should be observed, that south from Suddeeah to the Debree river is generally termed Chyquah. South of Debree river is called the Muttuck country, as far the Burro Dehing river. South of the Burro Dehing, river is situated Rajah Purundah Sing's country. From the hill and river called Jowrah Poong, which is nearly at the source of the Debree river, to a place called Beesa, south of the above hill, on the Burro Dehing river, near the little river Juglow Pauney, is called the Singpho country, being all to the east of the above line. Now it will be perceived, that not a single Tea tract has been discovered north of the Debree river, and that they are all on the south side of it. The Muttuck country, which I have traversed most, appears to me to be one vast Tea country, and I feel confident that not one half of its Tea tracts have been yet discovered. The whole of the soil of the Muttuck country appears well adapted for Tea ; I have taken particular notice of it, digging and examining it at every place where I have stopped. Great numbers of the Tea tracts have been cut down in sheer ignorance by the natives and converted into paddy fields. I know of three tracts, where the paddy had been collected, and the Tea plants had sprung up again ; when these are neglected they all rise up into thick wood jungle. Several of these places have been pointed out to me by some of the old inhabitants. Almost every inhabitant

of the Muttuck country know now the Tea leaf, seeing how much we prize it, and getting little rewards from me when they bring in a branch from any new tract. There is plenty of Tea in Rajah Purundah's country, but he is too lazy to trouble himself about it; he is not even acquainted with those places laid down in my map. I have lately heard of a very extensive tract in his country, said to be as large as a dozen tracts put together. Several tracts are 800 paces long and nearly the same in breadth, and others only 100; but they have not all been properly examined, and may prove much larger. All these tracts can be enlarged almost to any extent from the numerous seedlings that are found amongst the Tea plants, from the great number of seeds that can be collected every year, and from the immense number of cuttings that may be planted. With respect to the seedlings, I have sown numerous seeds at Suddeeah in the sun; many have come up and appeared to thrive very well for the first year, but there was an insect, the Mole Cricket I think it is called, which used to nip off the young and tender leaves, and carry them into a hole under ground near the root of the plant; and I never succeeded in getting one plant to live. But last year I sowed some seeds in my garden under the shade of trees and bushes, they have come up and are thriving very well. The seeds I sowed in the sun last year, in the Muttuck country, and in their native soil in one of my Tea tracts, have also come up and are doing well. The Tea tracts in the Singpho country are much larger than those in the Muttuck. The Singphos have known and drank the Tea for many years, but they make it in a very different way from what the Chinese do. They pluck the young and tender leaves and dry them a

little in the sun ; some put them out into the dew and then again into the sun three successive days, others only after a little drying put them into hot pans, turn them about until quite hot, and then place them into the hollow of a bamboo, and drive the whole down with a stick, holding and turning the bamboo over the fire all the time, until it is full, then tie the end up with leaves, and hang the bamboo up in some smoky place in the hut ; thus prepared the Tea will keep good for years. A good way further east they dig holes in the earth, line the sides with large leaves, boil the Tea leaves, throw away the decoction, put the leaves into the hole, which they cover over with leaves and earth, and then allow the whole to ferment ; after which it is taken out, filled into bamboos, and in this manner prepared taken to market. These Singphos pretend to be great judges of Tea. All their country abounds with the plant, but they are very jealous and will give no information where it is to be found, like the Muttuck people. All the Singpho territories are overrun with wood jungle, and if only the under wood was cleared, they would make a noble Tea country. The soil is well adapted for the plant. Nearly three years ago I by accident left a few Singpho Tea plants, which I had carried away, on the banks of the New Dehing, three days journey from the place where I had got them ; they were discovered by some Singpho friends of mine and stuck into the earth ; and there they are now growing, as if they had never been transplanted, and notwithstanding they were put in the shade. The Singpho country is a fine one, but as long as that nation can get the Tea leaves from the jungles, they never will cultivate the plant ; the country is thinly inhabited by a set of men, who are always fighting amongst them-

selves. The Tea is said to grow on the top of the Nagah Hills, marked in my map, South of Ningrew, on the banks of the Burro Dehing. All the Tea tracts laid down are in the vallies.

The above observations have been thrown together in a hurry, without much order. I therefore hope that allowances will be made for their imperfections. I may at some other time resume the subject if it is thought of any interest.

C. A. BRUCE,

Supt. of Tea Culture in Assam.

Section of the Kahong River, shewing the different channels the water had cut out for itself. The river is dry in the cold season, its banks are steep; all the little Islands are covered with Tea plants under shelter of the other trees; they are of various sizes, from 5 paces to 200, but near the bed of the river itself they are rather small. This kind of land is called Coor-kah Muddy.

